## LIST OF CONTENTS

### NUMBER 1

| L. L. Perez Tumini, P. C. Florido, M. M. Sbaffoni, M. J. Abbate, L. A. Mai and J. R. Maiorino | 1  | Study of a TANDEM fuel cycle between a Brazilian PWR (Angra-I) and an Argentinian CANDU (Embalse)                                      |
|---|----|--|
| S. K. GHORAI, P. M. SYLVA,<br>J. R. WILLIAMS and W. L. ALFORD                                 | 11 | Partial neutron cross sections for <sup>64</sup> Zn, <sup>66</sup> Zn, <sup>67</sup> Zn and <sup>68</sup> Zn between 14.2 and 18.2 MeV |
| M. GIMÉNEZ, M. SCHLAMP and A. CLAUSSE   | 17 | Analysis of the spatial distribution of aerosol dispersions  |
| Y. P. Mahlers   | 29 | Core loading pattern optimization based on simulated annealing and successive linear programming                                       |
| M. Antonopoulos-Domis, S. Kadi and K. Mourtzanos  | 39 | Departure from linearity of neutron cross-spectra phase in BWRs  |
| Technical Notes   |    |  |
| WILSON J. VIEIRA and  | 51 | Analysis of the sampling distribution in Monte   |
| PAUL N. STEVENS   |    | Carlo radiation transport calculations   |
| G. C. Bakos and N. F. Tsagas  | 57 | Penetration of multi-energy $\gamma$ -rays through double layer shielding slabs  |
| N. SATHYABAMA,  | 61 | Estimate of total control rod worth based on lower   |
| P. Mohanakrishnan and<br>S. M. Lee  |    | dimensional modelling  |
|   | I  | Guidelines for the preparation of typescripts for direct reproduction  |
|   |    |  |

#### NUMBER 2

|                                    | NUMBER 2  |     |
|------------------------------------|---|-----|
| H. A. OZGENER                      | 67 A reconsideration of the Goertzel-Greuling approximation for anisotropic scattering                        |     |
| Youn-Myoung Lee and<br>Kun Jai Lee | 71 Nuclide transport of decay chain in the fracture rock medium: a model using continuous time Markov process | ed  |
| MARCOS PIMENTA DE ABREU.           | 85 Transverse net leakage into the second-order N   | oda |

MARCOS PIMENTA DE ABREU, FERNANDO CARVALHO DA SILVA and ANTONIO CARLOS MARQUES ALVIM 85 Transverse net leakage into the second-order Noda Expansion Method

- J. Devooght and P. E. Labeau 97 M
- 97 Moments of the distributions in probabilistic dynamics
- P. E. LABEAU and J. DEVOOGHT
- 109 Synthesis of multivariate distributions from their moments for probabilistic dynamics

Technical Notes
G. C. BAKOS

- 125 Improvement of build up factors for multi-energy γ-rays penetration through Al, Fe and Pb shield combinations
- J. ZABADAL, M. VILHENA and L. BARICHELLO
- 131 Solution of the three-dimensional one-group discrete ordinates problems by the LTSN method
  - I Guidelines for the preparation of typescripts for direct reproduction

### NUMBER 3/4

GEE YONG PARK and POONG HYUN SEONG

135 Application of a fuzzy learning algorithm to nuclear steam generator level control

N. Morishima and Y. Aoki

147 Evaluation of cold neutron scattering cross sections for light and heavy water

G. C. POMRANING and ANIL K. PRINJA

159 Advection-diffusion as an asymptotic limit for transport in anisotropic media

R. T. ACKROYD, O. A. ABUZID and A. M. MIRZA

181 Discontinuous finite element solutions for neutron transport in X-Y geometry

MUSA YAVUZ

203 A one-D simplified discrete-ordinates method with no spatial truncation error

A. Dubi and N. Gurvitz

215 A note on the analysis of systems with time dependent transition rates

HEUI JOO CHOI, KUN JAI LEE and CHANG LAK KIM

Assessment of water-filled borehole as a preferred pathway penetrating radioactive waste repository

261 Book Review

263 Current Papers in Nuclear Energy

I Erratum

### NUMBER 5

| MADELINE ANNE FELTUS                             | 267 | An extended discharge burnup optimization technique using Penn State's Fuel Management Package and CASMO-3/SIMULATE-3                              |
|--|-----|--|
| MADELINE ANNE FELTUS and ERIC T. BEAUMONT        | 275 | RETRAN-02 MOD5 and RETRAN-03 code<br>benchmarks for Beaver Valley plant transients and<br>FSAR analyses  |
| JUNG-DO KIM, CHOONG-SUP GIL and HARK RHO KIM     | 283 | Application of recent iron evaluations of ENDF/B<br>JEF and JENDL to neutron transport calculations<br>through light water reactor pressure vessel |
| A. A. HARMS, B. W. AUGENSTEIN and N. S. RABOTNOV | 291 | Nuclear energy: in search of a paradigm shift  |
| G. C. Bakos                                      | 297 | Angular properties of the scattered photons for<br>combined 1.43 and 2.75 MeV source photons<br>penetrating single and double-layer shields        |
| M. SULTAN, E. ELSHERBINY and M. SOBHY            | 303 | A method for neutron transmutation doping of silicon in research reactors  |
| B. Mahalakshmi and P. Mohanakrishnan             | 311 | A two grid acceleration scheme for the nodal diffusion equation in hexagonal geometry  |
| Technical Note                                   |     |  |
| A. GALPERIN, P. GRIMM and<br>V. RAIZES           | 317 | Modelling and verification of the PWR burnable poison designs by ELCOS code system   |
|  | 327 | Current Papers in Nuclear Energy   |
|  | I   | Press Release from the NRPB  |
|  | N   | UMBER 6  |
| Toru Obara and<br>Hiroshi Sekimoto               | 331 | Feasibility of zero temperature coefficient core with<br>highly diluted fuel and graphite moderator  |
| THOMAS I DOWNAR and                              | 339 | Harmonic perturbation theory for the analysis of   |

| HIROSHI SEKIMOTO                             | 331 | highly diluted fuel and graphite moderator  |
|--|-----|---|
| THOMAS J. DOWNAR and DAVID A. PHEGLEY        | 339 | Harmonic perturbation theory for the analysis of boiling water reactor regional instabilities |
| R. S. Modak, D. C. Sahni and S. D. Paranjape | 359 | Evaluation of higher $K$ -eigenvalues of the neutron transport equation by $S_n$ -method      |
| Man Gyun Na                                  | 367 | Design of a steam generator water level controller via the estimation of the flow errors      |
| Man Gyun Na                                  | 367 |   |

| vi  | Volume Contents |  |
|---|-----------------|--|
| I. Pázsit   | 377             | Determination of reactor stability in case of dual oscillations  |
| M. MILOŠEVIĆ, M. PEŠIĆ, S. AVDIĆ and D. NIKOLIĆ                   | 389             | A comparative study of effective delayed neutron fraction  |
| G. VERDÚ, D. GINESTAR, V. VIDAL and J. L. Muñoz-Cobo              | 395             | A consistent multidimensional nodal method for transient calculations  |
| Letter to the Editor J. D. LEWINS                                 | 411             | Reactivity oscillations and stability with delayed neutrons  |
|   | 415             | Book Reviews   |
|   | 417             | Current Papers in Nuclear Energy   |
|   | 1               | NUMBER 7   |
| Y. NAGAYA and K. KOBAYASHI  | 421             | Solution of 1-D multi-group time-dependent diffusion equations using the coupled reactors theory                                     |
| Moon-Hee Han, Gyu-Seong Cho,<br>Kun-Jai Lee and Moon-Hyun<br>Chun | 441             | Spherical approximation in gamma dose calculations and its application to an emergency response action at Kori reactor site in Korea |
| R. L. BUCKLEY, S. K. LOYALKA and M. M. R. WILLIAMS                | 453             | Numerical studies of solute transport in a fractured medium subject to near- and non-equilibrium mass transfer                       |
| J. M. PARATTE and R. CHAWLA                                       | 471             | On the physics feasibility of LWR plutonium fuels without uranium  |

# Technical Note

R. Kozma and K. Nabeshima

F. BUTUIRAT and M. KIEŁKIEWICZ

497 Comparison of two approximate methods of aerosol dynamics

Studies on the detection of incipient coolant boiling in nuclear reactors using artificial neural networks

503 Current Papers in Nuclear Energy

### NUMBER 8

ALEX GALPERIN

507 Utilization of light water reactors for plutonium incineration

|   | •   | ordine contents  |
|---|-----|--|
| Teruaki Ohnishi   | 513 | Possible chaoticity for the time series of the amount of nuclear information released by the newsmedia |
| MARK W. LLOYD and<br>MADELINE ANNE FELTUS                             | 523 | Statistical core design methodology using the VIPRE thermal-hydraulics code                            |
| Yoshihiro Yamane and<br>Yamato Hayashi                                | 533 | Count-loss effect due to time interval between counting-gates in Feynman-α method                      |
| WITOLD DZWINEL, YURIY<br>PEPYOLYSHEV, PAVEL JIRSA<br>and JIRÍ REJCHRT | 543 | Comparison of noise diagnostic systems based on pattern recognition and discriminant methods           |
| Technical Note G. C. Bakos and N. F. Tsagas                           | 553 | Angular exposure dose build up factors for combined energies source of disc geometry                   |
| Letter to the Editor<br>YIGAL RONEN                                   | 559 | Prediction of the average number of prompt<br>neutrons from fissioning of some actinides               |
|   | 561 | Current Papers in Nuclear Energy   |
|   |     |  |
|   | ı   | NUMBER 9   |
| M. S. VAN DEN BERG  | 565 | Thermodynamic parameters and transport   |

| M. S. VAN DEN BERG  | 303 | coefficients of the U–C–F gas mixture in the steady flow gaseous core fission reactor                         |
|---|-----|---|
| SANJAY GUPTA, FEROZ AHMED and<br>SURESH GARG                | 585 | A simulation study of a proposed blanket design for a D-T fusion reactor                                      |
| H. S. Lim, K. M. Lee, M. Y. Ohn, N. H. Lee and J. H. Choi   | 593 | Validation of CATHENA against the CS28-1 high temperature experiment under an impaired cooling condition      |
| K. M. LEE, M. Y. OHN, H. S. LIM, J. H. CHOI and S. T. HWANG | 601 | Study on models for gap conductance between fuel and sheath for CANDU reactors                                |
| Technical Notes   |     |   |
| K. S. CHANG and D. J. LEE                                   | 611 | An experimental investigation of the air entrainment in the shutdown cooling system during mid-loop operation |
| M. A. SULTAN and M. E. KATTAB                               | 621 | Parametric study for optimization of the specific cost of installed electric power in nuclear plants          |

### NUMBER 10

629 Reconstruction of pin power in fuel assemblies from KANCHHI SINGH and VINOD KUMAR nodal calculations in hexagonal geometry 649 Optimal geometry for fuel solution sloshing based Toshihiro Yamamoto and on the boundary perturbation theory BENAN BASOGLU 659 Coolant temperature trends in EBR-II reflector D. MENEGHETTI subassemblies C. YILDIZ and E. ALCAN 671 The effect of strong anisotropic scattering on the critical sphere problem in neutron transport theory using a synthetic kernel Technical Note 681 The adiabatic Fuchs-Nordheim model and non-J. D. LEWINS dimensional solutions I Guidelines for the preparation of typescripts for

direct reproduction

|   | N   | TUMBER 11  |
|---|-----|--|
| BRIGITTE STROHMAIER   | 687 | Model calculations of excitation functions of<br>neutron-induced reactions on Rh   |
| MULYANTO and Asashi Kitamoto                                    | 697 | Grouping of HLW in partitioning for B/T (burning and/or transmutation) treatment with neutron reactors based on three criteria |
| S. ZAKI and H. SEKIMOTO   | 711 | Safety aspect of long-life small safe power reactors   |
| W. ROTHENSTEIN and R. DAGAN                                     | 723 | Two-body kinetics treatment for neutron scattering from a heavy Maxwellian gas   |
| H. SCHOONEWELLE, T. H. J. J. VAN DER HAGEN and J. E. HOOGENBOOM | 731 | Theoretical and numerical investigations into the SPRT method for anomaly detection  |
|   | 743 | Current Papers in Nuclear Energy   |

direct reproduction

Guidelines for the preparation of typescripts for

### NUMBER 12

- M. T. SISSAOUI, J. KOCLAS and
- A. HÉBERT
- F. E. JATUFF

A. RÁCZ

G. C. POMRANING and B. D. GANAPOL

Letter to the Editors AQUILINO SENRA MARTINEZ

- 747 An improved single sensor parity space algorithm for sequential probability ratio test
- 763 Solution of the improved and generalized quasistatic methods by Kaps and Rentrop integration scheme with stepsize control
- 775 Error estimators and adaptivity for the neutron diffusion problem
- 787 Asymptotically consistent reflection boundary conditions for diffusion theory
- 819 Remarks on the use of a corrected formula for the neutron flux in a heterogeneous lattice cell
- 823 Book Review
- 825 Current Papers in Nuclear Energy
  - I Guidelines for the preparation of typescripts for direct reproduction

